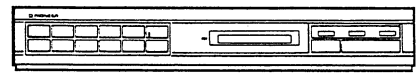
PIONEER®
The future of sound and vision.

# Service Manual



ORDER NO.
ARP1486

FM/AM DIGITAL SYNTHESIZER TUNER

# F-Z91L
# F-Z91

**MODEL F-Z91L AND F-Z91 HAVE FOUR VERSIONS :**

| Type | Applicable model | | Power requirement | Destination |
|---|---|---|---|---|
| | F-Z91L | F-Z91 | | |
| ZEB | O | – | (DC power supply) | European continent and United Kingdom |
| Z | – | O | (DC power supply) | General market |
| ZEZ | – | O | (DC power supply) | West Germany |
| ZIOX1B | – | O | (DC power supply) | Italy |
| ZIOX2B | – | O | (DC power supply) | Italy |

- **This manual is applicable to the F-Z91L/ZEB and F-Z91/Z types.**
- **For the F-Z91/Z type, refer to pages 27, 28.**
- **For the F-Z91/ZEZ type, refer to the additional service manual (ARP1487).**
- **For the F-Z91/ZIOX1B and ZIOX2B types, refer to the additional service manual (ARP1488).**
- **The F-Z91L covers the MW/LW bands while the F-Z91 covers the MW only.**
- **Ce manuel pour le service comprend les explications en français de réglage.**
- **Este manual de servicio trata del método ajuste escrito en español.**

## CONTENTS


1. SPECIFICATIONS ..... 2
2. PANEL FACILITIES ..... 2
3. PACKING ..... 3
4. EXPLODED VIEW AND PARTS LIST ..... 3
5. ELECTRICAL PARTS LIST ..... 6
6. P.C.BOARDS CONNECTION DIAGRAM ..... 12
7. SCHEMATIC DIAGRAM ..... 15
8. ADJUSTMENTS ..... 18
   RÉGLAGES ..... 21
   AJUSTES ..... 24
9. FOR F-Z91/Z TYPE ..... 27



**PIONEER ELECTRONIC CORPORATION** 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
**PIONEER ELECTRONICS SERVICE INC.** P.O. Box 1760, Long Beach, California 90801 U.S.A.
**PIONEER ELECTRONICS OF CANADA, INC.** 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
**PIONEER ELECTRONIC [EUROPE] N.V.** Keetberglaan 1, 2740 Beveren, Belgium
**PIONEER ELECTRONICS AUSTRALIA PTY. LTD.** 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911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# 1. SPECIFICATIONS

**FM Tuner Section**

Frequency range ..... 87.5MHz to 108MHz
Usable Sensitivity ..... 12.5dBf, IHF (1.2 μ V/75 ohms)
Sensitivity (DIN) ..... Mono 0.9 μ V/75 ohms
Stereo 50 μ V/75 ohms
Signal-to-Noise Ratio (IHF, 85 dBf Input) ..... Mono : 75dB
Signal-to-Noise Ration (DIN) ..... Mono : 66dB
Stereo : 60dB
Distortion ..... Stereo : 0.5% (1kHz)
Antenna Input ..... 300 ohm balanced
75 ohm unbalanced

**MW (AM) Tuner Section**

Frequency range ..... 531kHz to 1,602 kHz
Sensitivity (IHF, Loop antenna) ..... 350 μ V/m
Antenna ..... Loop Antenna
Output Level (AM 30% MOD) ..... 150mV

**LW Tuner Section**

**(For LW – equipped models only)**

Frequency range ..... 153kHz to 281 kHz
Sensitivity (IHF, Loop antenna) ..... 1500 μ V/m
Antenna ..... Loop Antenna
Output Level (AM 30% MOD) ..... 150mV

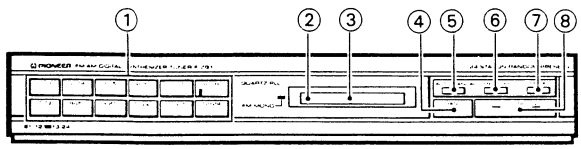
**Miscellaneous**

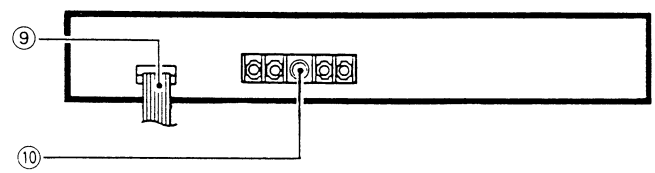
Dimensions ..... 360 (W) × 56 (H) × 317 (D) mm
Weight (without package) ..... 2.3kg (4 lb)

**Furnished Parts**

FM T-type Antenna ..... 1
AM Loop Antenna ..... 1

# 2. PANEL FACILITIES




**①STATION CALL switches**
These are used to recall preset broadcasting stations and to preset the station.

**②FM MONO indicator**
Usually turn this indicator off. If the desired FM station is weak and difficult to receive, press the MODE switch to turn the indicator on. Reception will be monaural, but the noise will be reduced, making listening more pleasant.

**③FREQUENCY display**
Permits reading the received frequency at a glance from the displayed figure. The FM band is indicated by MHz, and the AM (MW or LW) band by kHz.

**④BAND selector switch**
**[For model F – Z91]**
Each time this switch is pressed, FM or AM reception is selected alternately.
FM and MHz light : FM reception
AM and kHz light : AM reception
**[For model F – Z91L]**
Each time this switch is pressed, FM, MW or LW reception is selected alternately.
FM and MHz light : FM reception
AM and kHz light : MW or LW reception

**⑤AUTO/MANUAL switch (F – Z91 only)**
Use to select either the AUTO mode or MANUAL mode for FM/AM reception.

**⑥MEMORY switch**
This switch is used to memorize stations. When the switch is pressed, the frequency display will flash. To memorize the frequency of any station, press the station call switch while the frequency display is flashed.

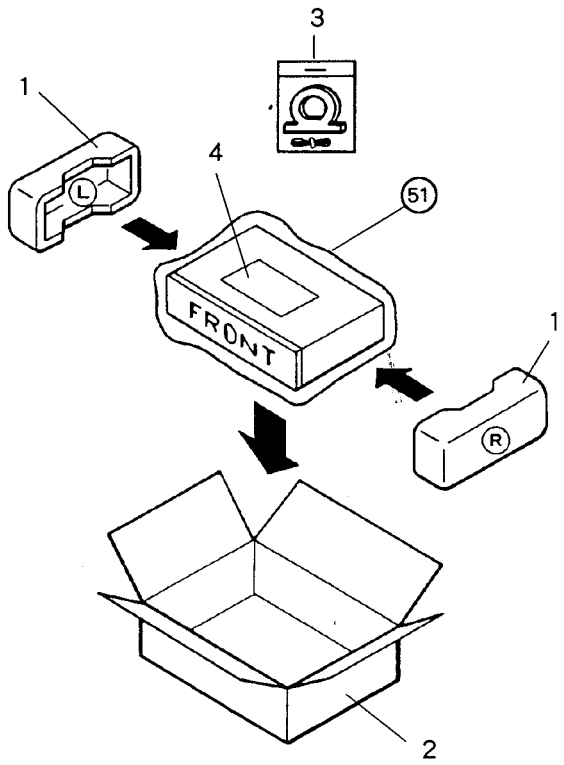
**⑦MODE switch**
This switch is used for switching between stereo and monaural when receiving FM stereo braoadcasts.

**⑧TUNING switch**
This is used to locate the stations.
Push either side of this switch ; the left side " –" to go to a lower, and the right side " +" to go to a higher frequency.

**⑩TUNER input/output cord**
Connect to the TUNER jack of the deck amplifier.

**⑪FM/AM antenna terminals**
Antennas must be connected to these terminals : otherwise you will not be able to receive stations.

# 3. PACKING




| Mark | No. | Part No. | Description |
|---|---|---|---|
| | 1 | AHA1141 | Side pad |
| | 2 | AHD1352 | Packing case |
| | 3 | AEA1002 | Antenna set |
| | 4 | ARH1047 | Operating instructions |
| | 51 | | Packing sheet |

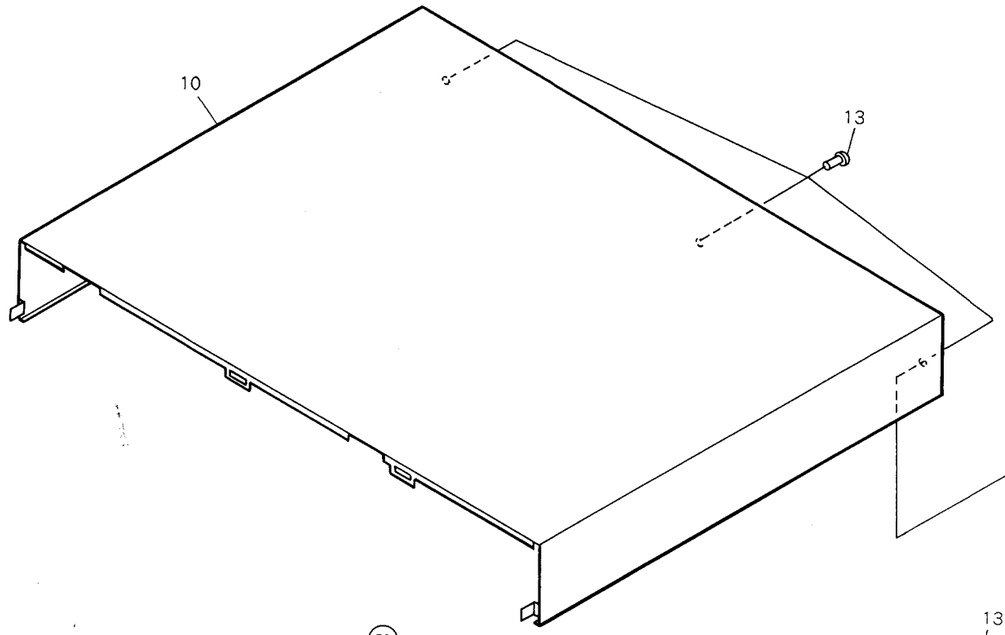
# 4. EXPLODED VIEW AND PARTS LIST

NOTES :

- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

## Parts List

| Mark | No. | Part No. | Description |
|---|---|---|---|
| | 1 | AWZ1696 | TUNER assembly |
| | 2 | AAD1313 | Band button (BAND) |
| | 3 | AAD1314 | Memory button (MEMORY, MODE) |
| | 4 | AAD1315 | Tuning button (TUNING +,−) |
| | 5 | AAD1316 | Station button A (1/13 − 6/18) |
| | 6 | AAD1317 | Station button B (7/19 − 12/24) |
| | 7 | AAK1430 | FL filter |
| | 8 | AAK1436 | Indicator panel |
| | 9 | AMB1294 | Front panel |
| | 10 | ANE1098 | Bonnet cover |
| | 11 | AEB1012 | Stopper |
| | 12 | AMR1002 | Leg assembly |
| | 13 | ABA-298 | Screw |
| | 14 | ADE1040 | Connect cable |
| | 15 | BPZ26P080FMC | Screw |
| | 51 | | Chassis |
| | 52 | | SW assembly A |
| | 53 | | SW assembly B |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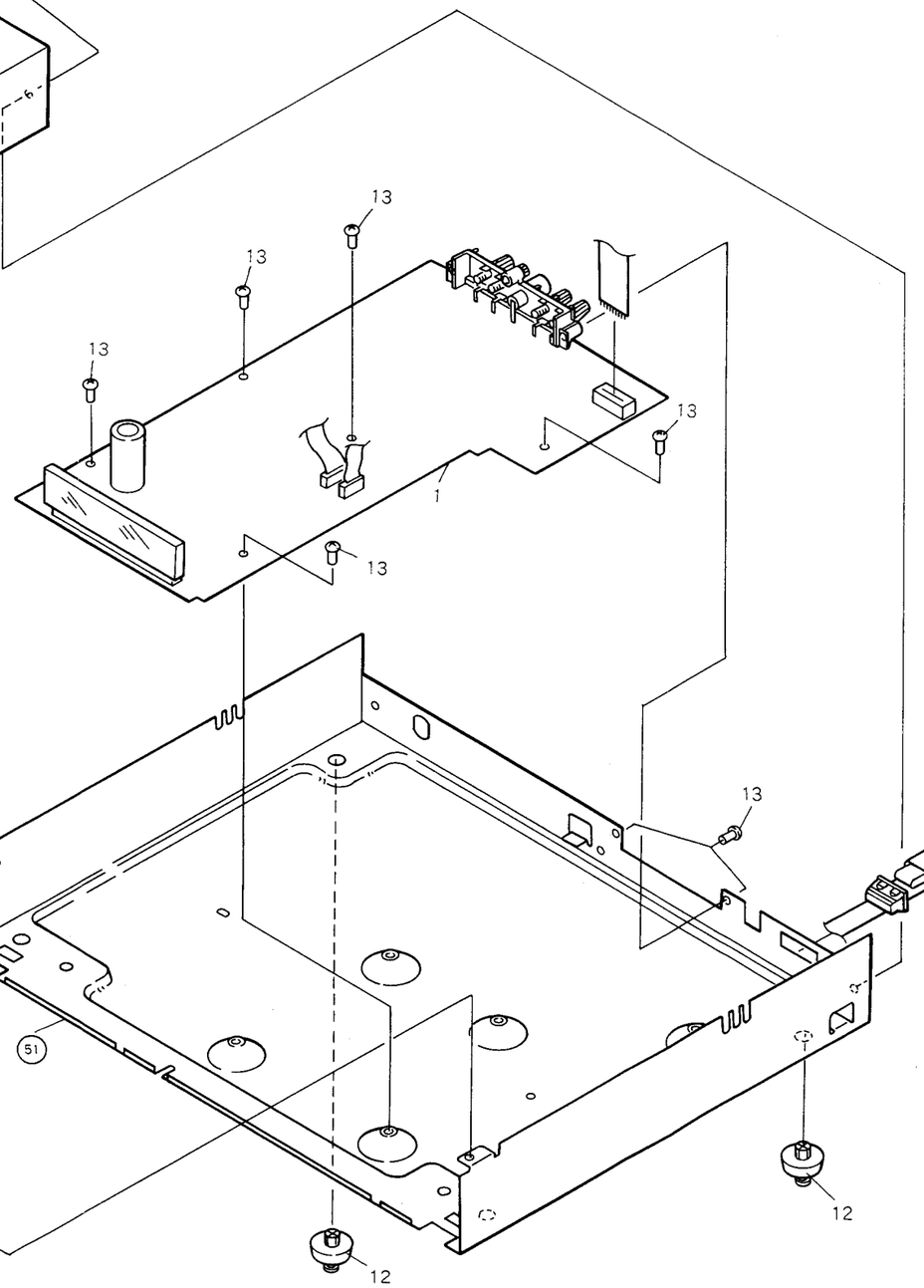
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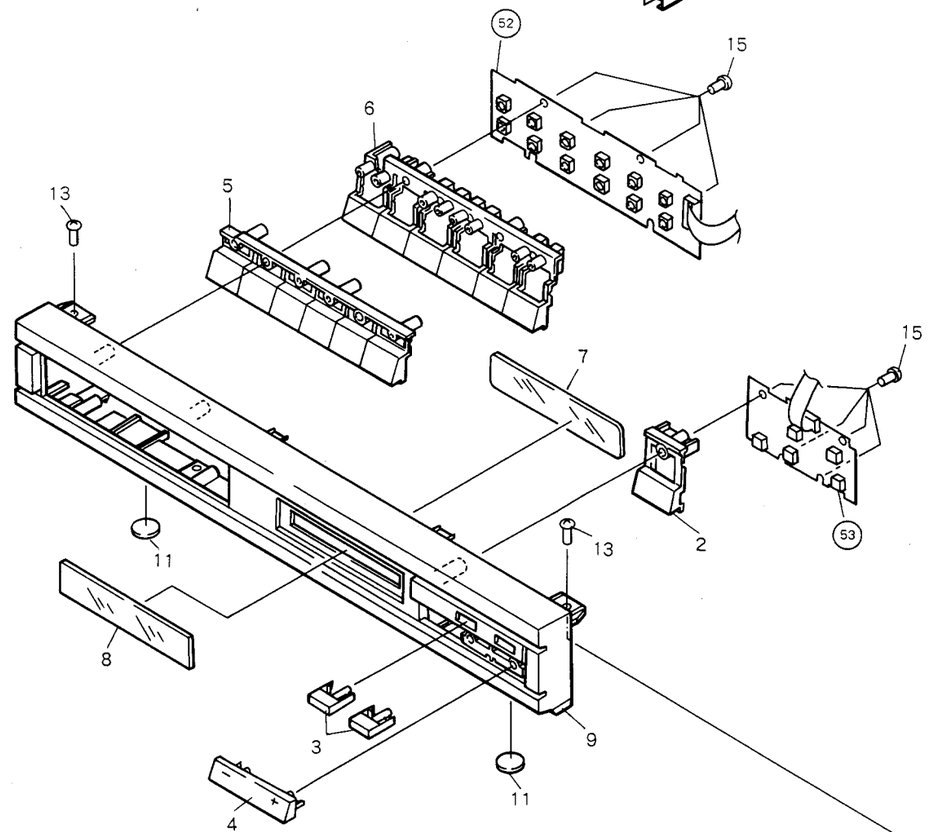
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4
11

# 5. ELECTRICAL PARTS LIST

NOTES :
- Parts without part number cannot be supplied.
- Parts marked by "⊘" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5 %, and K = 10 %).

560 Ω → 56 × $10^1$ → 561 ..... RD1/4PS 5 6 1 J
47k Ω → 47 × $10^3$ → 473 ..... RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ..... RN2H 0 R 5 K
1 Ω → 010 ..... RS1P 0 1 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 × $10^1$ → 5621 ..... RN1/4SR 5 6 2 1 F

## Miscellaneous Parts

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | TUNER assembly | AWZ1696 |
| | SW assembly A | |
| | SW assembly B | |

## SW Assembly A

### SWITCHES

| Mark | Symbol & Description | Part No. |
|---|---|---|
| ★★ | S101 – S112 Tact switch (1/13 – 12/24) | ASG-711 |

## SW Assembly B

### SWITCHES

| Mark | Symbol & Description | Part No. |
|---|---|---|
| ★★ | S114 – S118 Tact switch (MEMORY,MODE,BAND, TUNING (+,–)) | ASG-711 |

## TUNER Assembly (AWZ1696)

### SEMICONDUCTORS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| ★★ | IC102 | AN7470P |
| ★★ | IC101 | LA1265S |
| ★★ | IC103 | LM7001 |
| ★★ | IC104 | PD5074 |
| ★★ | Q106 – Q108 | DTA143ES |
| ★★ | Q121 | DTC124ES |
| ★★ | Q120 | 2SA933S |
| ★★ | Q113 – Q119 | 2SC1740S |
| ★★ | Q109,Q110 | 2SC1740SLN |
| ★★ | Q103,Q104 | 2SC2668 |
| ★★ | Q102 | 2SC2786 |
| ★★ | Q111,Q112 | 2SC2878 |
| ★★ | Q105 | 2SK161 |
| ★★ | Q101 | 2SK241 |
| ★ | D101,D102 | ITT310 |
| ★ | D116,D124 | RD7.5ESB |
| ★ | D112,D122,D123 | SVC321C3 (SVC321D3) |
| ★ | D106 – D111,D113 – D115,D117, D701 | 1SS252 |
| ★ | D104,D105 | 1SS85 |

## COILS, FILTERS AND TRANSFORMERS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | T101 AM antenna transformer | ATB-095 |
| | T102 LW antenna transformer | ATD1002 |
| | T103 FM matching transformer | ATE-063 |
| | L103 AM OSC coil | ATB-100 |
| | L102 FM coil | ATC1002 |
| | L101 FM coil | ATC1004 |
| | L106 FM coil | ATC1011 |
| | L104 LW OSC coil | ATD-023 |
| | L109 FM detector coil | ATE-079 |
| | L105,L107 Axial inductor | LAU2R2M |
| | L110 Axial inductor | LAU220K |
| | L108 Inductor | LTA472J |
| | F105 FM ceramic filter | ATF-107 |
| | F104 FM ceramic filter | ATF-119 |
| | F101 FM bandpass filter | ATF-155 |
| | F102 AM ceramic filter | ATF1042 |

## CAPACITORS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| | TC101,TC102 Ceramic trimmer | ACM-015 |
| | TC103 Ceramic trimmer | ACM-020 |
| | C172 (2200 $\mu$ F/5.5V) | ACH1023 |
| | C106 | CCDCH010C50 |
| | C105 | CCDCH020C50 |
| | C134 | CCDCH560J50 |
| | C103 | CCDRH150J50 |
| | C115 | CCDTH180J50 |
| | C101 | CCMCH040C50 |
| | C131 | CCMCH070D50 |
| | C114 | CCMCH080D50 |
| | C112,C117,C124,C125 | CCMCH150J50 |
| | C113 | CCMCH330J50 |
| | C140 | CCMCH470J50 |
| | C107,C126 – C128,C174,C177 | CCMSL101J50 |
| | C155 | CEANP010M50 |
| | C161 | CEASR22M50 |
| | C152 | CEAS0R1M50 |
| | C154,C166,C167,C170 | CEAS010M50 |
| | C160 | CEAS1R5M50 |
| | C136,C175,C176 | CEAS100M25 |
| | C159 | CEAS3R3M50 |
| | C141 – C143 | CEAS4R7M50 |
| | C123,C144,C147,C171 | CEAS470M10 |
| | C109,C120,C150,C156,C163 | CEAS470M16 |
| | C118,C121 | CFTXA224J50 |
| | C116,C164,C165 | CKDYB102K50 |
| | C168,C169 | CKDYB472K50 |
| | C102,C104,C108,C111,C119,C138, C139,C178 | CKDYF103Z50 |
| | C145 | CKDYF222Z50 |
| | C110,C122,C129,C130,C132, C137,C148,C149,C151,C162 | CKDYF223Z50 |
| | C146,C157,C173 | CKDYF473Z50 |
| | C153 | CKMYB221K50 |
| | C135 | CQSA301J50 |
| | C133 | CQSA431J50 |
| | C158 | CQSA471J50 |

## RESISTORS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| ★ | VR101 Semi-fixed (22k Ω) | VRTB6VS223 |
| ★ | VR102 Semi-fixed (4.7k Ω) | VRTB6VS472 |
| | R138 | RD1/2PM220J |
| | R119,R125,R157 | RFA1/4PS□□□J |
| | Other resistors | RD1/8PM□□□J |

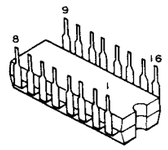
## OTHERS

| Mark | Symbol & Description | Part No. |
|---|---|---|
| ★ | V101 Fluorescent indicator tube | AAV1047 |
| ★ | X101 Crystal resonator (7.2MHz) | ASS1005 |
| ★ | X102 Ceramic resonator (4MHz) | ASS1025 |
| | Antenna terminal with PAL socket | AKA1010 |

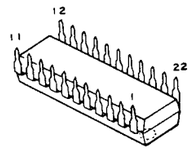


## External apperance of Transistor and ICs

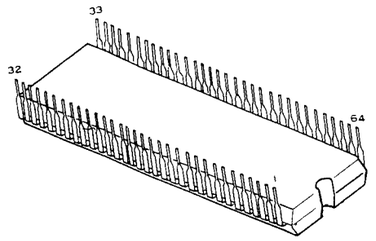
**LM7001**
**AN7470P**



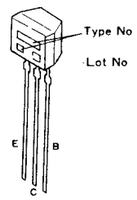

**LA1265S**



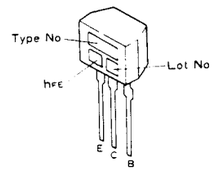

**PD5074**



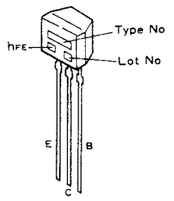

**DTA143ES**
**DTC124ES**



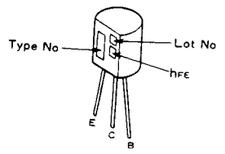

**2SA933S**
**2SC1740S**
**2SC1740SLN**
**2SC2668**




**2SC2786**

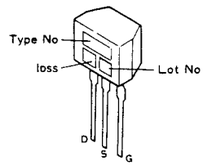



**2SC2878**




**2SK161**

**2SK241**



SW ASSEMBLY A

SW ASSEMBLY B

2 ONLY

BAND

TUNING

AUTO

MEMORY

MODE

STEP

CHANNEL

S-METER

VCO

VCO ADJ

TUNE

KEY

ANTENNA
LOOP
AM

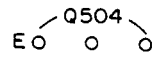
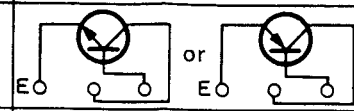
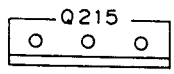
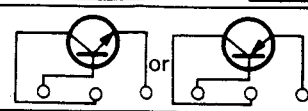
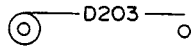
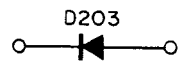
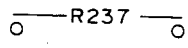
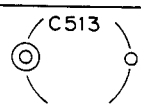
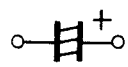
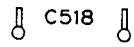
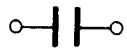
GND

BAR
ROOD

TUNER ASSEMBLY AW21868 (E-Z3IL\2EB)
AW21768 (E-Z3IL\2)

NOTE

1. This P.C.B connection diagram is viewed from the foil side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

| P.C.B. pattern diagram indication | Corresponding part symbol | Part Name |
|---|---|---|
|  |  | Transistor |
|  |  | Radiator type transistor |
|  |  | Diode |
|  | | Resistor |
|  |  | Capacitor (Polarity) |
|  |  | Capacitor (Non-polarity) |

Others

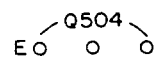
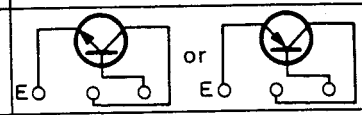
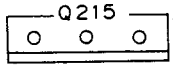
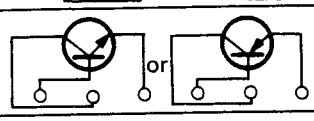
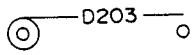
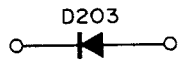
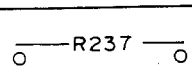
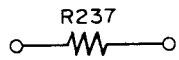
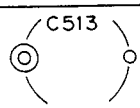
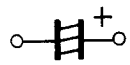
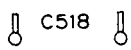
| P.C.B. pattern diagram indication | Part Name |
|---|---|
| IC | IC |
| S | Switch |
| RY | Relay |
| L | Coil |
| F | Filter |
| VR | Variable resistor or Semi-fixed resistor |

3. The capacitor terminal marked with ◎ (double circles) shows negative terminal.
4. The diode terminal marked with ◎ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

# 6. P.C.BOARDS CONNECTION DIAGRAM

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

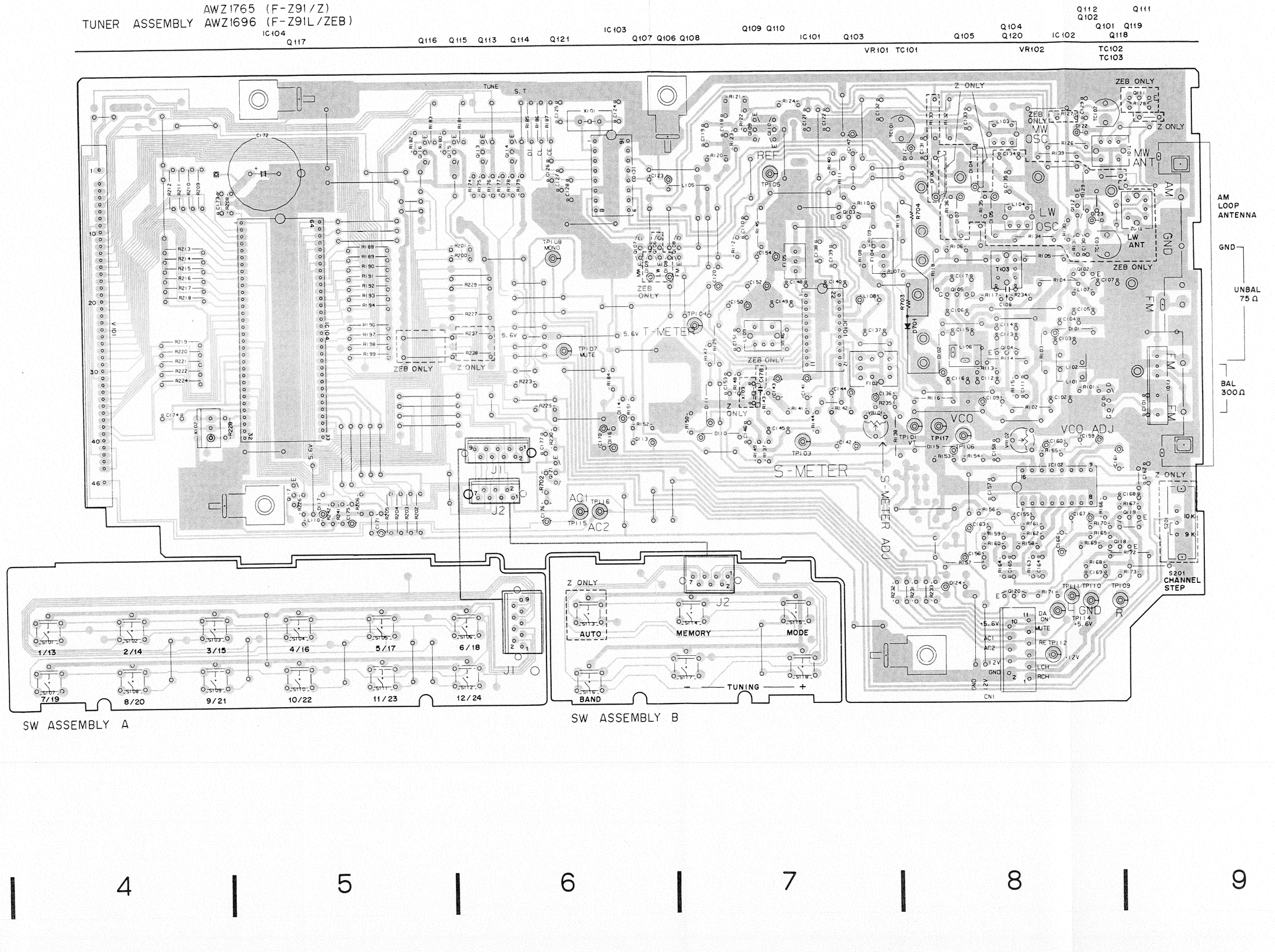
| P.C.B. pattern diagram indication | Corresponding part symbol | Part Name |
|---|---|---|
|   |   | Transistor |
|   |   | Radiator type transistor |
|   |   | Diode |
|   |   | Resistor |
|   |   | Capacitor (Polarity) |
|   | | Capacitor (Non-polarity) |

Others

| P.C.B. pattern diagram indication | Part Name |
|---|---|
| IC | IC |
| S | Switch |
| RY | Relay |
| L | Coil |
| F | Filter |
| VR | Variable resistor or Semi-fixed resistor |

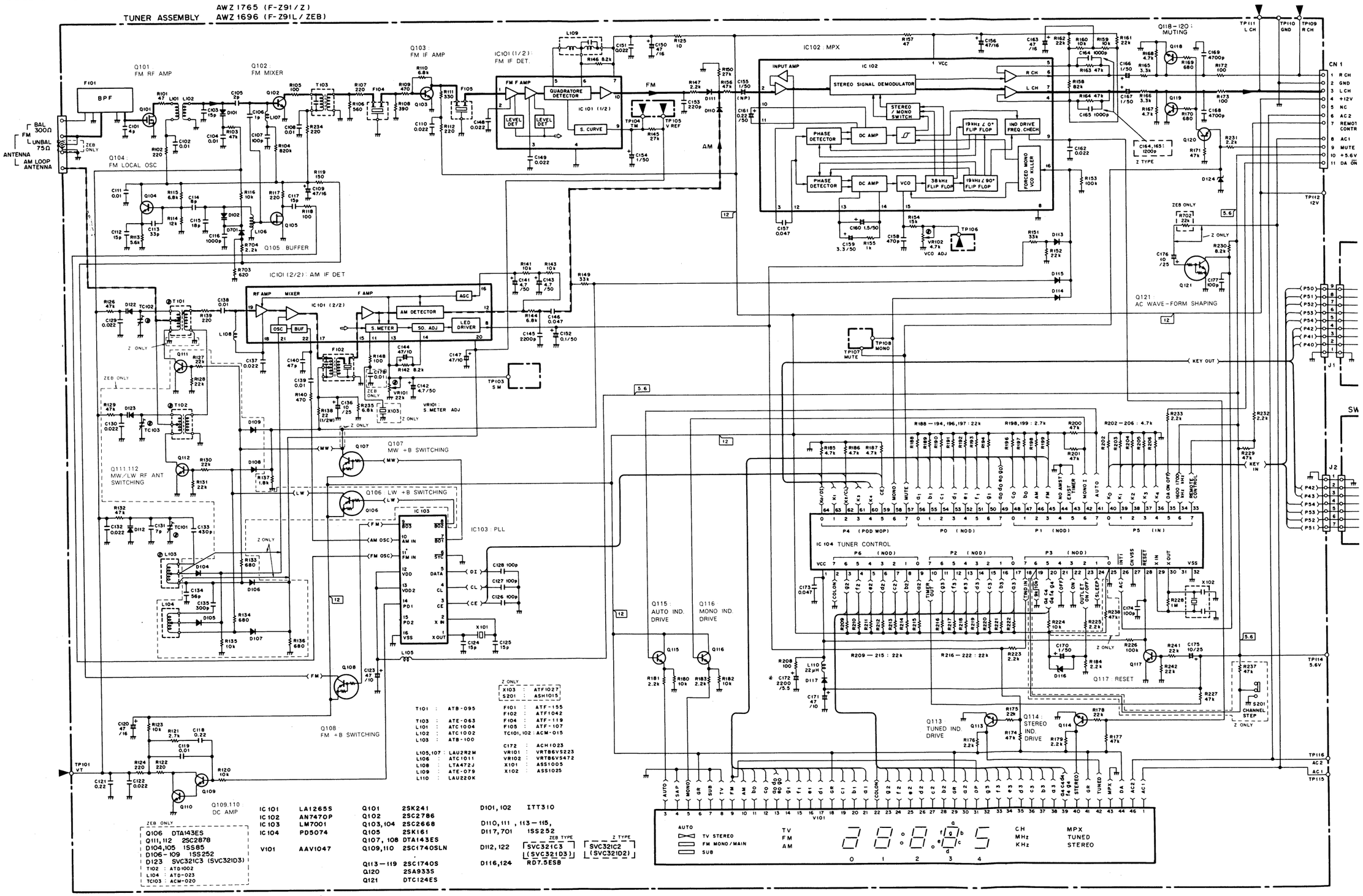
3. The capacitor terminal marked with ◎ (double circles) shows negative terminal.
4. The diode terminal marked with ◎ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

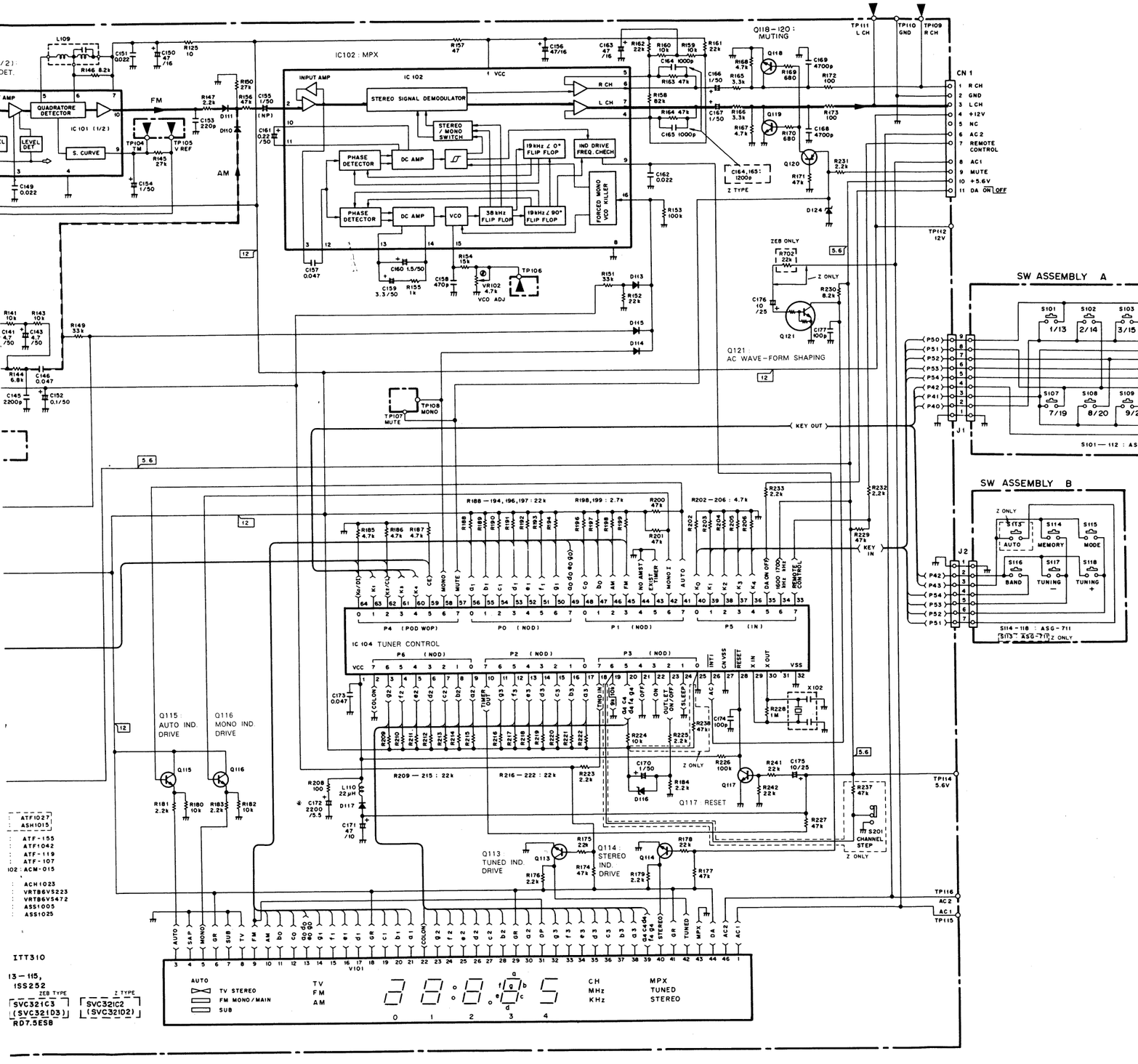
# TUNER ASSEMBLY AWZ1765 (F-Z91/Z) AWZ1696 (F-Z91L/ZEB)



# 7. SCHEMATIC DIAGRAM

TUNER ASSEMBLY — AWZ1765 (F-Z91/Z) / AWZ1696 (F-Z91L/ZEB)






1. RESISTORS :
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (M) ; ±20% tolerance.

2. CAPACITORS :
   Indicated in capacity (μF) / voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :
   ▭ ; DC voltage (V) at no input signal.
   Value in ( ) is DC voltage at rated power.
   ⇦mA ; DC current at no input signal.
   mV ; Signal voltage at FM 400Hz ± 75Hz DEV.

4. OTHERS :
   ➡ ; Signal route.
   ⊘ ; Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts numbers.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES : (The underlined indicates the switch position)
   SW ASSEMBLY A
   S101 : 1/13
   S102 : 2/14
   S103 : 3/15
   S104 : 4/16
   S105 : 5/17
   S106 : 6/18
   S107 : 7/19
   S108 : 8/20
   S109 : 9/21
   S110 : 10/22
   S111 : 11/23
   S112 : 12/24
   SW ASSEMBLY B
   S113 : AUTO (F – Z91/Z TYPE ONLY)
   S114 : MEMORY
   S115 : MODE
   S116 : BAND
   S117 : TUNING –
   S118 : TUNING +
   TUNER ASSEMBLY
   S201 : CHANNEL STEP (F – Z91/Z TYPE ONLY)

# 8. ADJUSTMENTS

## Preparation

- Turn each VR and trimmer to mechanical center position.
- Supply power.(See Fig.8 – 3.)
- The TPs, VRs, etc. for adjustments are located in the TUNER assembly.(See Fig.8 – 3.)

## AM (MW) Section Adjustments

- Connect up as indicated in Fig.8 – 1.
- Select the AM (MW) mode with the BAND selector.
- Set the tuning interval to 9kHz with the 9kHz/10kHz selector.(For the Z model only)

| Step No. | AM SG (400Hz, 30% modulation) | | F – Z91L tuned frequency display | Adjustments | |
|---|---|---|---|---|---|
| | Frequency (kHz) | Level (dB μ/m) | | Adjustment location | Specifications |
| 1 | – | – | 531kHz | L103 | Adjust so that the voltage between TP101 and ground is 1.25V ± 0.1V. |
| 2 | – | – | 1602kHz | TC101 | Adjust so that the voltage between TP101 and ground is 10.0V ± 0.5V. |
| 3 | Repeat steps 1 and 2. | | | | |
| 4 | 603 | 30 | 603kHz | T101 | Maximize the voltage between the output terminal (TP111 : Lch, TP109 : Rch) and ground. |
| 5 | 1395 | 30 | 1395kHz | TC102 | Maximize the voltage between the output terminal (TP111 : Lch, TP109 : Rch) and ground. |
| 6 | Repeat steps 4 and 5. | | | | |

## AM (LW) Section Adjustments

- Connect up as indicated in Fig.8 – 1.
- Select the AM (LW) mode with the BAND selector.

| Step No. | AM SG (400Hz, 30% modulation) | | F – Z91L tuned frequency display | Adjustments | |
|---|---|---|---|---|---|
| | Frequency (kHz) | Level (dB μ/m) | | Adjustment location | Specifications |
| 1 | – | – | 281kHz | L104 | Adjust so that the voltage between TP101 and ground is 4.95V. |
| 2 | 164 | 30 | 164kHz | T102 | Maximize the voltage between the output terminal (TP111 : Lch, TP109 : Rch) and ground. |
| 3 | 254 | 30 | 254kHz | TC103 | |

## FM Section Adjustments

● Connect up as indicated in Fig.8 – 2.
● Select the FM mode with the BAND selector.

| Step No. | FM SG (1kHz, ± 75kHz deviation) | | F – Z91L tuned frequency display | Adjustments | |
|---|---|---|---|---|---|
| | Frequency (MHz) | Level (dB μ) | | Adjustment location | Specifications |
| 1 | 98.0 | 60 | 98.0MHz | L109 | Adjust so that the voltage between TP104 and TP105 is 0V.(T – meter : center position) |
| 2 | 98.0 | 10 | 98.0MHz | L106, T103 | Maximize the voltage between the output terminal (TP111 : Lch, TP109 : Rch) and ground. |
| 3 | – | – | 108.0MHz | – | Check so that the voltage of TP101 is within 10.8V. |
| 4 | 98.0 | 60 | 98.0MHz | T103 (within ± 90° ) | Minimize the distortion of the output terminal (TP111 : Lch, TP109 : Rch). |
| 5 | 98.0 | Variable | 98.0MHz | VR101 | Adjust so that the TUNED indicator lights up at the level of 20dB ± 2dB. |
| 6 | 98.0 | 60 (no modulation) | 98.0MHz | VR102 | Adjust so that the frequency of TP106 is 76kHz ± 200Hz. |

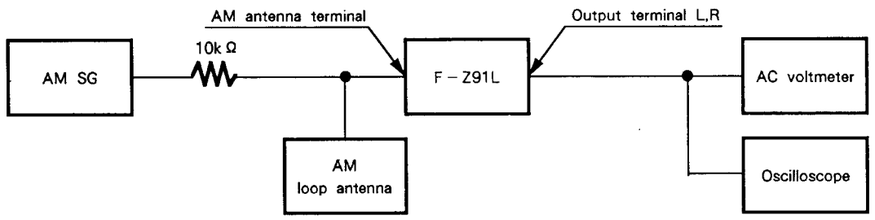



Fig.8 – 1 AM adjustment wiring diagram

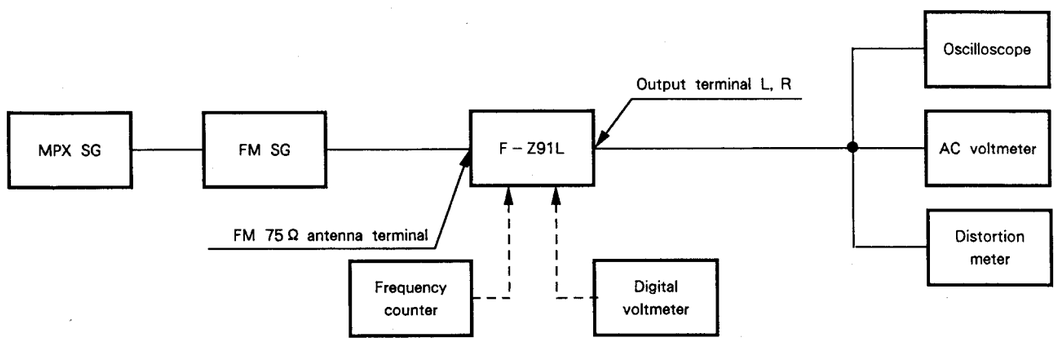



Fig.8 – 2 FM adjustment wiring diagram

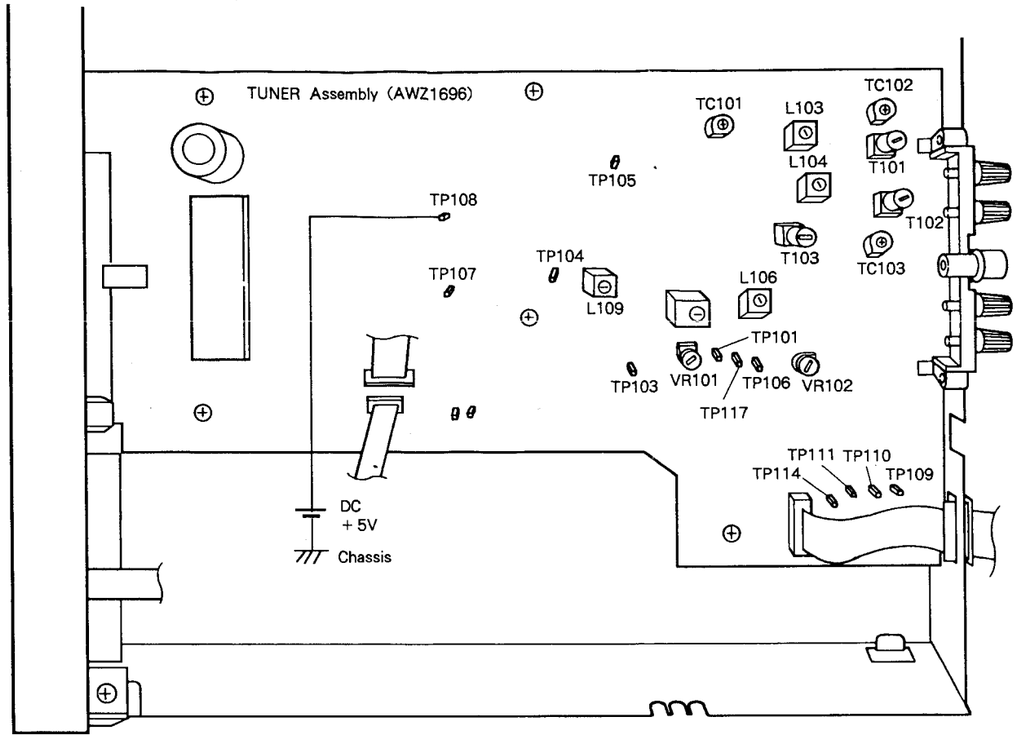



Fig.8 – 3 Adjustment point

# 8. RÉGLAGES

### Préparatifs

- Tourner chaque résistance variable et vis de réglage sur leur position mécanique centrale.
- Alimenter l'appareil (voir Fig.8 – 3).
- Les TP, VR, etc. destinés au réglages sont situés dans le bloc d'assemblage du TUNER (voir Fig.8 – 3)

### Réglages de la section AM (MW)

- Faire les raccordements comme indiqué en Fig.8 – 1.
- Choisir le mode AM (MW) par le sélecteur de BAND.
- Régler l'intervalle d'accord sur 9kHz avac le sélecteur 9kHz/10kHz (pour le modèle Z uniquement).

| N° d' étape. | AM SG (400Hz, modulation 30%) | | F – Z91L Affichage de la fréquence de réception | Réglage | |
|---|---|---|---|---|---|
| | Fréquence (kHz) | Niveau (dB μ/m) | | Emplacement du réglage | Spécifications |
| 1 | – | – | 531kHz | L103 | Régler de sorte que la tension entre TP101 et la masse soit de 1,25V ± 0,1V. |
| 2 | – | – | 1602kHz | TC101 | Régler de sorte que la tension entre TP101 et la masse soit de 10,0V ± 0,5V. |
| 3 | Répéter les étapes 1 et 2. | | | | |
| 4 | 603 | 30 | 603kHz | T101 | Maximiser la tension entre la borne de sortie (TP111 : canal gauche, TP109 : canal droit) et la masse. |
| 5 | 1395 | 30 | 1395kHz | TC102 | Maximiser la tension entre la borne de sortie (TP111 : canal gauche, TP109 : canal droit) et la masse. |
| 6 | Répéter les étapes 4 et 5. | | | | |

### Réglages de la section AM (LW)

- Faire les raccordements comme indiqué en Fig.8 – 1.
- Choisir le mode AM (LW) par le sélecteur de BAND.

| N° d' étape | AM SG (400Hz, modulation 30%) | | F – Z91L Affichage de la fréquence de réception | Réglage | |
|---|---|---|---|---|---|
| | Fréquence (kHz) | Niveau (dB μ/m) | | Emplacement du réglage | Spécifications |
| 1 | – | – | 281kHz | L104 | Régler de sorte que la tension entre TP101 et la masse soit de 4,95V. |
| 2 | 164 | 30 | 164kHz | T102 | Maximiser la tension entre la borne de sortie (TP111 : canal gaucne, TP109 : canal droit) et la masse. |
| 3 | 254 | 30 | 254kHz | TC103 | |

## Réglages de la section FM

● Faire les raccordements comme indiqué en Fig.8 – 2.
● Choisir le mode FM par le séecteur de BAND.

| N° d' étape | FM SG (1kHz, déviation ± 75kHz) | | F – Z91L Affichage de la fréquence de réception | Réglage | |
|---|---|---|---|---|---|
| | Fréquence (MHz) | Niveau (dB μ) | | Emplacement du réglage | Spécifications |
| 1 | 98.0 | 60 | 98.0MHz | L109 | Régler de sorte que la tension entre TP104 et TP105 soit de 0V (T – mètre : position centrale). |
| 2 | 98.0 | 10 | 98.0MHz | L106, T103 | Mazimiser la tension entre la borne de sortie (TP111 : canal gauche, TP109 : canal droit) et la masse. |
| 3 | – | – | 108.0MHz | – | Vérifier de sorte que la tension de TP101 est compris entre 10.8V. |
| 4 | 98.0 | 60 | 98.0MHz | T103 (dans ± 90° ) | Minimiser la distorsion de la borne de sortie (TP111 : canal gauche, TP109 : canal droit) et la masse. |
| 5 | 98.0 | Variable | 98.0MHz | VR101 | Régler de sorte que le témoin TUNED s'allume au niveau de 20dB ± 2dB. |
| 6 | 98.0 | 60 (pas de modulation) | 98.0MHz | VR102 | Régler de sorte que la fréquence de TP106 soit de 76kHz ± 200Hz. |

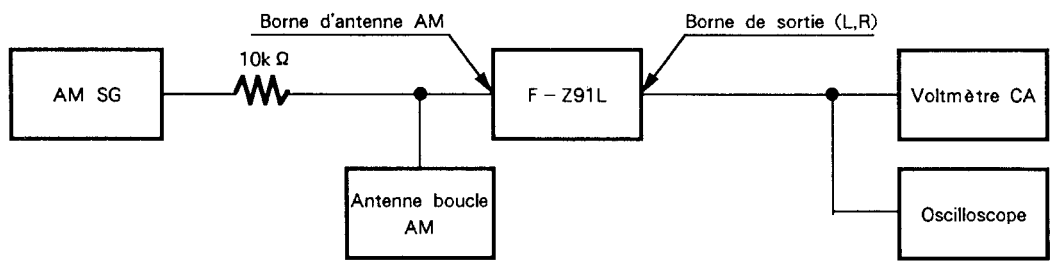



Fig.8 – 1 Diagramme de câblage de réglage AM

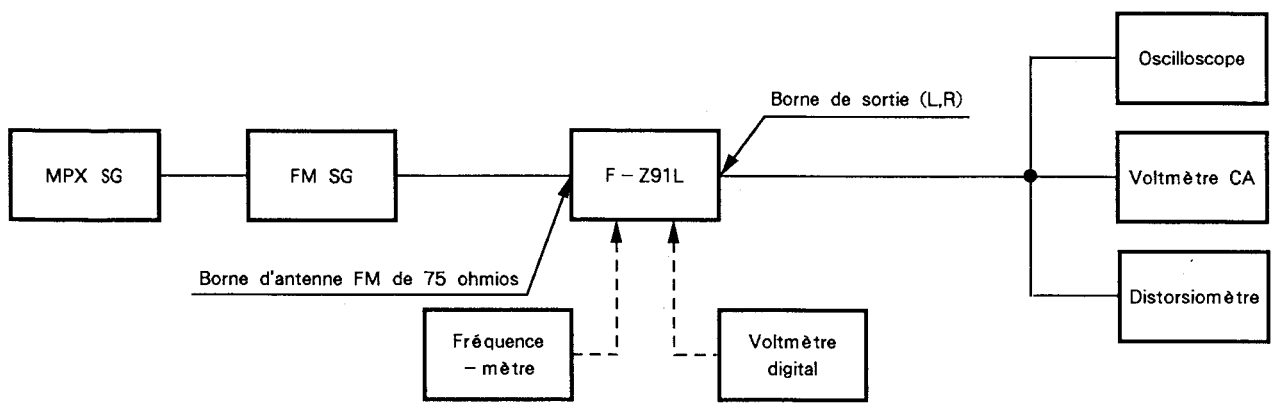



Fig.8 – 2 Diagramme de câblage de réglage FM

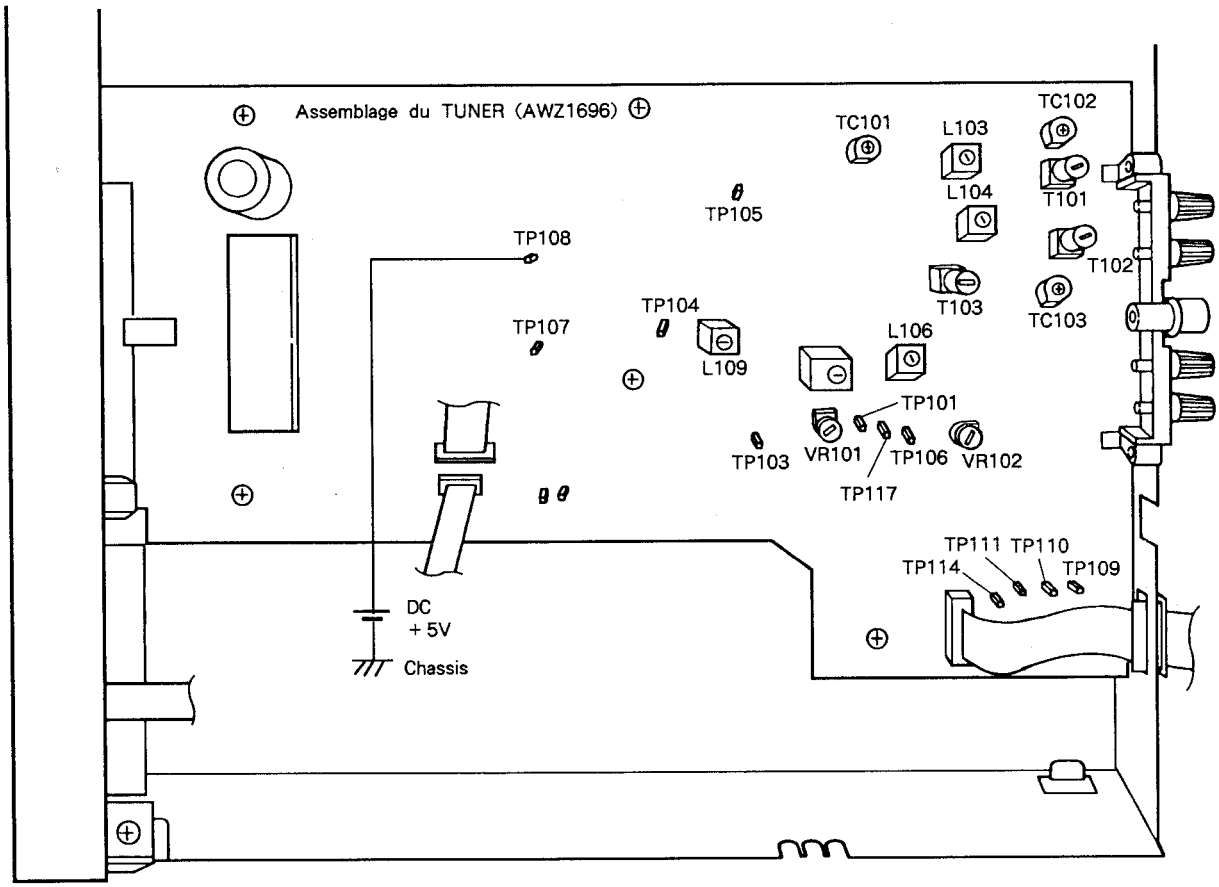



Fig.8 – 3 Point de réglage

# 8. AJUSTES

## Preparativos

- Gire todos los VR y capacitores de compensación hasta la posicion de su centro mecánico.
- Conecte la alimentación.(Veáse la Fig.8 – 3.)
- Los TP, VR, etc, para los ajustes se encuentran situados en el conjunto del TUNER.(Véase la Fig.8 – 3.)

## Ajuste de la sección de AM (MW)

- Conecte como es indicado en la Fig.8 – 1.
- Ponga el selector de BAND en AM (MW).
- Ajuste el intervalo de sintonía a 9kHz con el selector 9kHz/10kHz.(Para el modelo Z solamente)

| N.° | AM SG (400Hz, modulación 30%) | | F – Z91L Indicación de la frecuencia recibida | Ajuste | |
|---|---|---|---|---|---|
| | Frecuencia (kHz) | Nivel (dB μ V/m) | | Punto de ajuste | Procedimiento de ajuste |
| 1 | – | – | 531kHz | L103 | Ajuste hasta que la tensión entre TP101 y masa sea de 1,25V ± 0,1V. |
| 2 | – | – | 1602kHz | TC101 | Ajuste hasta que la tensión entre TP101 y masa sea de 10,0V ± 0,5V. |
| 3 | Repita los pasos 1 y 2. | | | | |
| 4 | 603 | 30 | 603kHz | T101 | Aumente al máximo la tensión entre los terminales de salida (TP111 : canal izquierdo y TP109 : canal derecho) y masa. |
| 5 | 1395 | 30 | 1395kHz | TC102 | Aumente al máximo la tensión entre los terminales de salida (TP111 : canal izquierdo y TP109 : canal derecho) y masa. |
| 6 | Repita los pasos 4 y 5. | | | | |

## Ajuste de la sección de AM (LW)

- Conecte como es indicado en la Fig.8 – 1.
- Ponga el selector de BAND en AM (LW)

| N.° | AM SG (400Hz, modulación 30%) | | F – Z91L Indicación de la frecuencia recibida | Ajuste | |
|---|---|---|---|---|---|
| | Frecuencia (kHz) | Nivel (dB μ V/m) | | Punto de ajuste | Procedimiento de ajuste |
| 1 | – | – | 281kHz | L104 | Ajuste hasta que la tensión entre TP101 y masa sea de 4,95V. |
| 2 | 164 | 30 | 164kHz | T102 | Aumente al maximo la tensión entre los terminales de salida (TP111 : canal izquierdo y TP109 : canal derecho) y masa. |
| 3 | 254 | 30 | 254kHz | TC103 | |

## Ajuste de la sección de FM

● Conecte como es indicado en la Fig.8 – 2.
● Ponga el selector de BAND en FM.

| N.° | FM SG (1kHz, desviación ± 75kHz) | | F – Z91L Indicación de la frecuencia recibida | Ajuste | |
|---|---|---|---|---|---|
| | Frecuencia (MHz) | Nivel (dB μ) | | Punto de ajuste | Procedimiento de ajuste |
| 1 | 98.0 | 60 | 98.0MHz | L109 | Ajuste hasta que la tensión entre TP104 y TP105 sea de 0V.(T METER : posición central) |
| 2 | 98.0 | 10 | 98.0MHz | L106, T103 | Aumente al máximo la tensión entre los terminales de salida (TP111 : canal izquierdo y TP109 : canal derecho) y masa. |
| 3 | – | – | 108.0MHz | – | Verificar hasta que la tensión del TP101 está dentro de 10.8V. |
| 4 | 98.0 | 60 | 98.0MHz | T103 (dentro de ± 90° C) | Disminuya al mínimo la distorsión de los terminales de salida (TP111 : canal izquierdo y TP109 : canal derecho). |
| 5 | 98.0 | Variable | 98.0MHz | VR101 | Ajuste hasta que se encienda el indicador TUNED a un nivel de 20dB ± 2dB. |
| 6 | 98.0 | 60 (pas de modulation) | 98.0MHz | VR102 | Ajuste hasta que la frecuencia de TP106 sea de 76kHz ± 200Hz. |

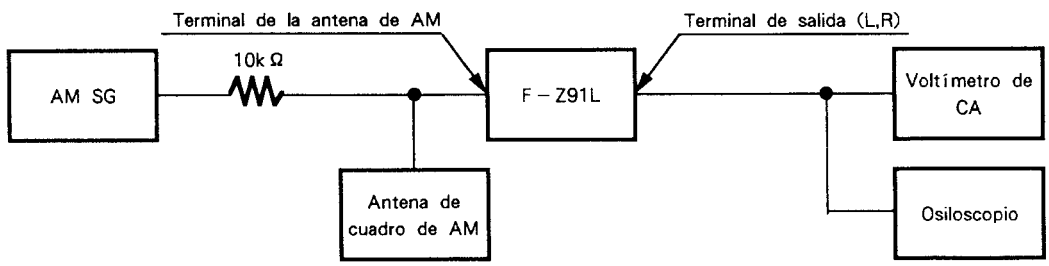



Fig.8 – 1 Diagramma de conexión de ajuste de AM

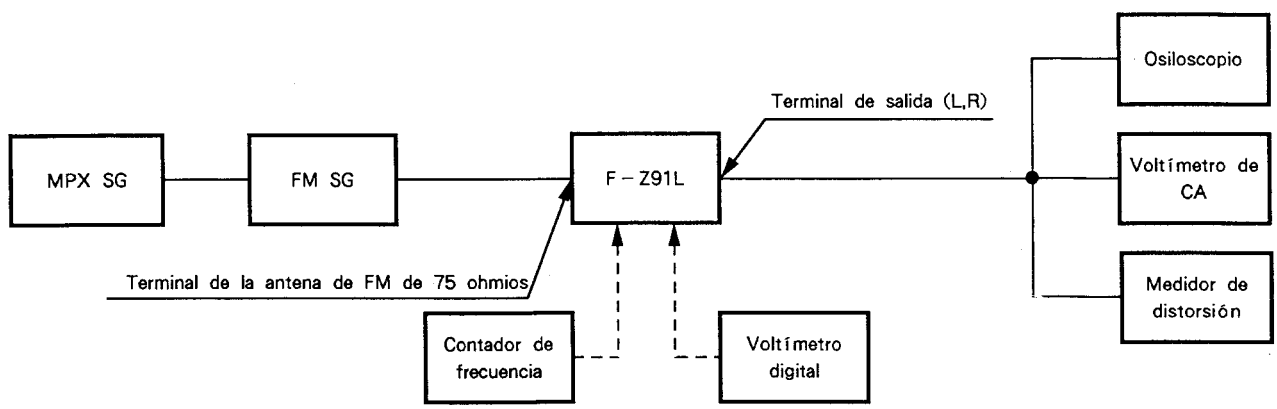



Fig.8 – 2 Diagramma de conexión de ajuste de FM

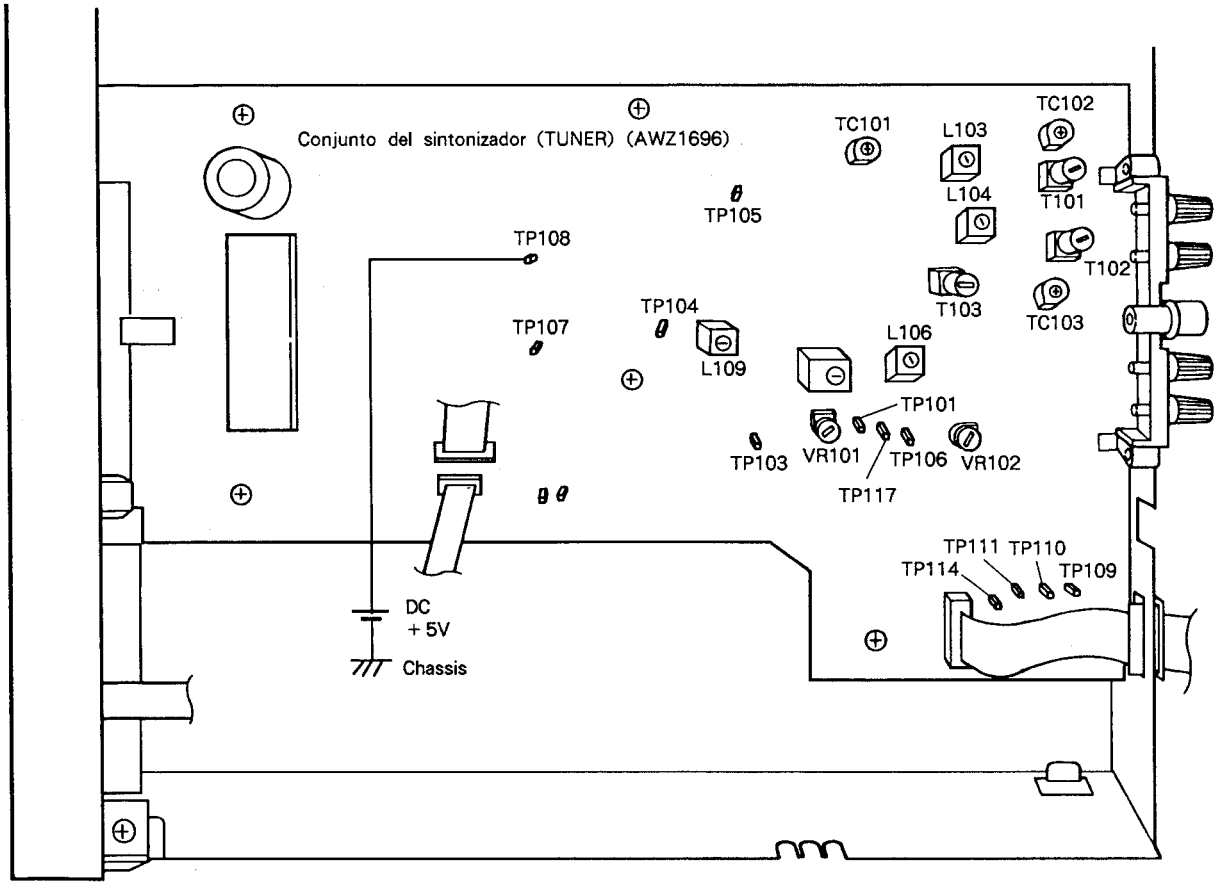



Fig.8 – 3 Puntos de ajuste

# 9. FOR F－Z91／Z TYPE

NOTES :
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

## Contrast of Miscellaneous Parts

**The F－Z91／Z type is the same as the F－Z91L／ZEB type with the exception of the following sections.**

| Mark | Symbol & Description | Part No. | | Remarks |
|---|---|---|---|---|
| | | F－Z91L／ZEB type | F－Z91／Z type | |
| | Memory button (AUTO) | • • • • • | AAD1314 | For packing |
| | Packing case | AHD1352 | AHD1375 | |
| | Front panel | AMB1294 | AMB1310 | |
| | Bonnet cover | ANE1098 | ANE1101 | |
| | TUNER assembly | AWZ1696 | AWZ1765 | |
| | SW assembly B | Non supply | Non supply | |

## SW Assembly B

**The SW Assembly B for the F－Z91／Z type is the same as the SW Assenbly B for the F－Z91L／ZEB type with the exception of the following sections.**

| Mark | Symbol & Description | Part No. | | Remarks |
|---|---|---|---|---|
| | | F－Z91L／ZEB type | F－Z91／Z type | |
| ★★ | S113 Tact switch (AUTO) | • • • • • | ASG-711 | |

## TUNER Assembly (AWZ1765)

**The TUNER Assembly (AWZ1765) is the same as the (AWZ1696) with the exception of the following sections.**

| Mark | Symbol & Description | Part No. | | Remarks |
|---|---|---|---|---|
| | | AWZ1696 | AWZ1765 | |
| | C130 | CKDYF223Z50 | • • • • • | |
| | C134 | CCDCH560J50 | • • • • • | |
| | C135 | CQSA301J50 | • • • • • | |
| | C178 | CKDYF103Z50 | • • • • • | |
| ★ | D104,D105 | 1SS85 | • • • • • | |
| ★ | D106 – D109 | 1SS252 | • • • • • | |
| ★ | D112,D122 | SVC321C3 (SVC321D3) | SVC321C2 (SVC321D2) | |
| ★ | D123 | SVC321C3 (SVC321D3) | • • • • • • • • • • | |
| | L104 | ATD-023 | • • • • • | |
| ★★ | Q106 | DTA143ES | • • • • • | |
| ★★ | Q111,Q112 | 2SC2878 | • • • • • | |
| | R127,R128,R130,R131 | RD1/8PM223J | • • • • • | |
| | R129 | RD1/8PM473J | • • • • • | |
| | R133,R134,R136 | RD1/8PM681J | • • • • • | |
| | R135 | RD1/8PM103J | • • • • • | |
| | R237,R238 | • • • • • | RD1/8PM473J | |
| ★★ | S201 Slide switch (9kHz/10kHz) | • • • • • | ASH1015 | |
| | T102 LW antenna transformer | ATD1002 | • • • • • | |
| | TC103 Ceramic trimmer | ACM-020 | • • • • • | |
| ★ | X103 Ceramic resonator | • • • • • | ATF1027 | |
| | Antenna terminal with PAL socket | AKA1010 | • • • • • | |
| | Antenna terminal | • • • • • | AKA1009 | |
| | C164,C165 | CKDYB102K50 | CKDYB122K50 | |